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pp. 271–312.] [August 30, 1913.

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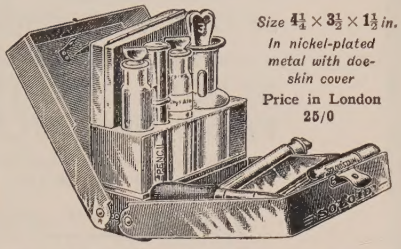

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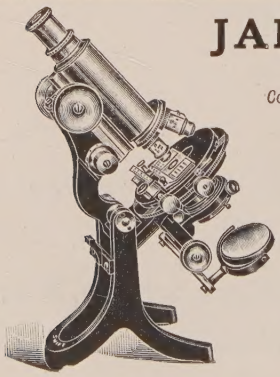

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TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 2.] 1913. [No. 6.

PLAGUE.

TODD (P. J.). **A Study of Plague.**—*China Med. Jl.* 1913. Jan. Vol. 27. No. 1. pp. 10-20; and May. No. 3. pp. 158-167.

In order to stay the plague at Macao in 1912, the Chinese paraded the streets at night with lanterns and torches, amid the beating of gongs and discharge of fireworks, so that the evil demons might be terrified and expelled. 1710 people died of plague in Hongkong in that year. Several hundred cases occurred in Canton and many more in the neighbouring villages.

In the author's ten years' experience of plague, the first symptom is often a chill; headache and pains in the bones, nausea and vomiting are frequent during the twenty-four hours following the onset. The fever in severe cases mounts to 104°-106° F., and at the end of the second or the beginning of the third day it falls to 102°-103°. By the end of the third day or on the fourth day it reascends to 105°-106° F. when death takes place.

Many cases present atypical symptoms at the beginning and end of an epidemic.

Seventeen out of 40 cases of bubonic plague which were treated with combined intravenous and subcutaneous injections of 20-400 cc. of anti-plague serum recovered. Before the author began serum therapy, he lost all his plague patients. He recommends the administration of ten grains of urotropin every hour until irritation of the bladder is complained of, and the injection of 10-20 drops of pure phenol into each gland, although he quotes KLEIN who found that 1 in 30 formalin failed to kill the *B. pestis* in 15 minutes, and that 1 in 80 phenol must act on the bacillus for 10 minutes before it is destroyed. Digitalis and strophanthus are more effective than strychnine in sustaining the action of the heart. Morphine may be employed but antipyrine is to be avoided.

C. Birt.

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DE SOUSA JUNIOR (Antonio). **Algumas considerações sobre a Peste Bubonica.** [Some Considerations on Bubonic Plague.]—*Medicina Contemporanea.* 1913. June 15. Vol. 31. No. 24. pp. 185-187.

Plague appeared at Oporto in 1899 since when the author has accumulated a few facts relating to it. Recently his work has been carried on in Lisbon.

The author agrees with the German and Austrian commissioners in denying the existence of primary septicaemic plague. The Austrian commission believed that slight generalized plague adenitis was caused by infection from the tonsils as from a primary bubo. The author's cases of plague of the tonsil and fauces did not support this view. He considers his faucial cases in two groups, first those infected by fleas. In 80 per cent. of these the cervical pain and tumefaction preceded the angina, the interval between these varying from a few hours to two or three days. In 20 per cent. of the cases the two appeared simultaneously but in no case did the angina precede the pain and swelling of the neck. At autopsy he found the buboes in the neck haemorrhagic and necrotic and their lesions in no way less advanced than those of the tonsils and fauces. These considerations make him conclude therefore that the fauces and tonsils were secondarily infected from the cervical buboes. In the case of those infected from pneumonic or faucial cases there may be localized faucial attacks which clear up, the sputum never showing many *B. pestis.* The infection on the other hand may reach the lung. In these cases the sputum is loaded with plague bacilli and five or six days after infection cervical buboes appear. These after death are found to be tumid, soft, pale and without surrounding reaction. He only saw one case of primary bubo of the neck from faucial infection in 800 patients. The experience of TERJINAMIA in the case of the Manchurian epidemic of pneumonic plague was similar. He agrees with the view of the advisory committee. "No primary infection of the blood in plague except in the foetus." He states further that slight generalized plague adenitis always starts from a primary bubo, which careful examination will reveal. It does not start from the tonsil.

W. J. Penfold.*

HARKER (W. E.). **Outbreak of Plague amongst Apprentices on board the British Steamer "Bellailsa."**—*Annual Report of the Medical Officer of Health, Tyne Port Sanitary Authority,* 1912. 1913. p. 24-26.

The s.s. Bellailsa left Rosario on July 2nd, 1912, with a cargo of maize, called at Monte Video on July 18, St. Vincent August 4, Teneriffe August 16, and arrived at Hamburg on August 25. R. H. Morton, one of four ship-apprentices, was attacked with a sudden illness, and died on September 4. The Port Medical Officer of Hamburg, Dr. Sannemann, reported that plague was

* It has been arranged that, from July 1st, the Plague Section shall be in charge of Dr. J. HENDERSON-SMITH. Dr. HENDERSON-SMITH has since gone abroad for three months, and in his absence Dr. W. J. PENFOLD is acting for him.

the cause of death. On September 8 another apprentice, J. R. McWhirter, fell ill. He was put ashore at Cuxhaven where he too died of bubonic plague.

The vessel reached the Tyne on September 10, when a third apprentice, J. W. Raeburn, was seized with high fever, and great prostration. The fauces were congested and there was slight enlargement of the deep lymphatic glands at the angle of the jaw. One cc. of blood-stained fluid was obtained on puncture at this site, from which the *B. pestis* was grown. On September 12 signs of double pneumonia were observed. He died on September 16.

On September 25 after the Bellailsa had been fumigated, 12 rats were collected, one of which was infected with plague.

The three apprentices who died of plague, bought a tame rabbit at Rosario. The rabbit-hutch was situated near the spot where the plague-rat was found. It is supposed that the rabbit became infected by the rat, which was attracted to its cage by the food, for the rabbit died suddenly on the day before the first case of plague occurred, and its body was thrown overboard. The three boys were in the habit of playing with the rabbit in their berth. The four apprentices were quartered in the after part of the ship by themselves. The three victims occupied a large berth on the port side, and the fourth apprentice who escaped, a similar berth on the starboard side. This youth did not interest himself in the pet rabbit. None of the rest of the crew, 35 in number, was attacked.

C. B.

AUMANN. **Erfahrungen bei einigen in das Hamburger Staatsgebiet eingeschleppten Fällen von menschlicher Pesterkrankung.** [Observations on Plague Cases imported into the Hamburg District.] — *Centralbl. f. Bakt.* 1. Abt., Orig. 1913. June 21. Vol. 69. No. 5-6. pp. 353-378. With 5 text-figs.

No plague had been imported into Hamburg since the year 1907, until September 1912 when the s.s. Bellailsa arrived. A full clinical history of the second case of plague (McWhirter) which arose in that vessel is given, and a long account of the bacteriological investigations is appended. The youth was treated with salvarsan, the failure of which has been reported already (see this *Bulletin*, Vol. 1, p. 316).

Ten rats were captured while the ship was unloading at Hamburg, but none were infected with plague.

C. B.

SIGNORELLI (E.). **Sulle Alterazioni Anatomo-Patologiche che il Bacillo della Peste o la sua Tossina produce nei Polmoni.** [Morbid changes produced by the *B. pestis* and its Toxin in the lungs.]—*Lo Sperimentale.* 1913. May 23. Vol. 67. No. 2. pp. 155-166. With 1 plate.

The most noticeable features found on microscopical examination of the lungs of a case of pneumonic plague were, thrombosis of the interalveolar capillaries; desquamation of the alveolar

epithelium; exudation into the alveoli in which the fibrin was not abundant, nor was it of haemorrhagic character except where the capillaries had burst; invasion of the tissues by the *B. pestis*, where it occurred in large clumps.

Five to ten cc. of a solution of the nucleoprotein of the plague bacillus containing .002 gm. per cc. were injected into the lungs of six dogs which were destroyed 48 hours later. The changes which resulted resembled those of lobar pneumonia in the stage of red hepatization. The fibrinous exudate consisted of plugs of fibrin which filled the alveoli; entangled in the fibrin were red and white corpuscles in abundance; hyperaemia and oedema of the lung were marked; the alveolar epithelium, which was degenerated, was detached; no bacteria were present. The injection of *B. pestis* nucleoprotein into the lungs of dogs therefore gives rise to aseptic fibrinous inflammation. In the lung lesions caused by *B. pestis* the fibrinous deposit occurs chiefly in the pulmonary capillaries which become blocked in consequence; in the alveoli it is limited to a coarse network of fine filaments. On the other hand in the inflammation set up by the nucleoprotein of *B. pestis*, the fibrinous exudate is more compact and is confined to the alveoli; the capillaries are free. In pneumonic plague the degenerative processes in the alveolar epithelium and leucocytes are more marked than in the lesions caused by the nucleoprotein.

Pneumonic plague is an inflammation of fibrinous type with localization of the fibrin chiefly in the pulmonary capillaries; the fibrin formation arises from the specific clotting action of the nucleoprotein of the *B. pestis*. The thrombosis of the interalveolar capillaries is one of the factors which causes the severity of pneumonic plague.

C. B.

Robin (L. V. E.). **Conclusions Générales des Délibérations de la Conférence Internationale de la Peste à Moukden (Avril 1911).** [**Traduit de l'Anglais.**]—*Arch. de Méd. et Pharm. Navales.* 1913. Mar. Vol. 99. No. 3. pp. 208-217; Apr. No. 4. pp. 285-293; and May. No. 5. pp. 361-374.

A summary of this work appeared in this *Bulletin*, Vol. 1, pp. 217-226 and pp. 308-312.

C. B.

Plague in Porto Rico.

Creel (R. H.). i. **Plague Eradication in Porto Rico.**—*Jl. Amer. Med. Assoc.* 1913. May 17. Vol. 60. No. 20. pp. 1527-1532.

ii. **Outbreak and Suppression of Plague in Porto Rico. An Account of the Course of the Epidemic and the Measures employed for its Suppression by the United States Public Health Service.**—*U.S. Public Health Rep.* 1913. May 30. Vol. 28. No. 22. pp. 1050-1070. With a map and 3 plates; and June 6. No. 23. pp. 1121-1149. With 3 plates.

There was an outbreak of plague in San Juan, the population of which is 50,000, between the middle of June and the beginning of September 1912. General insanitary conditions are not the

cause of plague, for the inhabitants of the most squalid part of Puerta de Tierra, where the houses are built on elevated piers on account of the swampy nature of the ground, remained free from the disease.

26,532 *Mus norvegicus*, 7,953 *M. alexandrinus*, 4,514 *M. rattus*, 6,533 *M. musculus* and 258 mongoose were examined between June 23rd 1912 and February 15 1913; 66 rats were infected, of which 37 were *M. norvegicus*; 4 *M. rattus*; 1 *M. alexandrinus*; 2 *M. musculus*; and 22 were unclassified. In only one were found signs of chronic plague. During July and August a considerable number of rodents was examined in which buboes and marked subcutaneous injection were present, and bipolar staining rods were not infrequent in smears. Not much stress however was laid on the microscopical examination, since saprophytes invading the tissues after death often appear as bipolar staining rods, especially if carbol thionine has been used.

The average number of fleas per rat in 1,940 rats examined was 0·64; more than 90 per cent. were *Xenopsylla cheopis*; *Ctenocephalus canis*, and the chicken flea, *Echidnaphaga gallinae* were also found, 18 of the latter were obtained from six *M. norvegicus*. The numbers varied considerably; 54 fleas were caught on three rats, but no fleas were found on 26 rats. The rats harboured rather more fleas during the month with least rainfall.

For the eradication of the plague, it was required that dwellings should be raised two feet from the ground with the underpinning free, or that they should be surrounded with a concrete wall extending 2 feet below the surface, and 1 foot above the floor level in the case of food stores; doors and windows to be made rat-proof; fowl-houses and pens to be supplied with concrete floors and walls, and to be protected with ¼ inch mesh wire netting. For the poisoning and trapping of rodents 269 trappers and 9,000 traps were employed. Sulphur fumigation and petroleum spraying of infected premises were carried out. In the case of loosely constructed walls in which were numerous burrows, they were protected by a 4 inch coating of concrete extending 2 feet below and 1 foot above the ground level. Pipes, wires, and trees were guarded by galvanised iron collars 2 feet or more in diameter.

Summary.

" There were 55 cases of human plague in the Porto Rico epidemic, 10 having occurred at the date of announcement of the disease and 45 afterwards. All were of the bubonic type, with a mortality of 65 per cent.

" Flea infestation in Porto Rico is very low compared with that in other tropical countries. The data are not sufficient to determine if there is a seasonal variation. The species of fleas encountered on rodents were *X. cheopis*, *Echidnaphaga gallinae*, *Ctenocephalus canis*, and *P. irritans*, with the addition of *Rhynchoprion penetrans* (chigoe) on the human host. The infestation of rats by the chicken flea in San Juan is noteworthy. The decline in rat population as indicated by the weekly catch was marked, and to a large degree was the result of rat-proofing. The rat-infection extended to 4 points outside San Juan; to Carolina, a distance of 14 miles; Caguas 23 miles; Arecibo about 50 miles; and Rio Piedras 3 miles. Only in the first-named village did human cases occur (3). The presumptive evidence points to an extension by infected rats in merchandise. The infection in Rio Piedras might have been carried there by migratory rodents.

"In Porto Rico the *M. norvegicus*, *M. alexandrinus*, and *M. rattus* infest houses, but the former predominates. *M. alexandrinus* is the species chiefly found in rural districts. Sufficient data are not at hand as to the variation of breeding, but it is probable that there is no seasonal fluctuation of this nature among the rodents of Porto Rico."

C. B.

Plague in the Philippines.

Heiser (Victor G.). **The Outbreak of Plague in Manila during 1912. The Insidious Beginning, with a Discussion of Probable Factors concerned in its Introduction.** — *Philippine Jl. of Science.* Section B., Trop. Med., 1913. Apr. Vol. 8. No. 2. pp. 109-115. With 1 map.

On June 19th, 1912, plague broke out in Manila. For the previous six years the town had been free from human plague with the exception of imported cases, which however had always been intercepted at the quarantine station.

During the previous April three infected ships arrived at Manila. After the time of arrival of the second of these the temperature of every person, on in-coming vessels, was taken, with the result that in the case of the third ship a Chinese passenger was detained because his pulse was 100 and his temperature 39° C.

Seven days after, this patient's temperature fell and indubitable evidence of plague appeared, the patient dying of the disease.

The first actual case arising in Manila was that of a Filippino who resided in the Chinese district, and died after three days' illness. No satisfactory explanation of the infection of this patient was forthcoming. She had not been out of the city for months. She did not live near the water front, and did not associate with anyone who had been recently out of the city. During the next four months straggling cases occurred in different streets, without apparent connection, but three successive cases were all in boys under sixteen.

In October a sharp extension of the epidemic occurred, when it was found that all the new cases were in labourers who worked in one freight station. This extension of the epidemic was preceded by a heavy rat mortality in the warehouse. From the commencement of the epidemic till the end of August, 3,000 rats per month were caught, but not till the 31st of August was a plague-infected rat found amongst them. Up to October 1st only ·005 per cent. of the rats examined were infected as against 7 per cent. for example in Hong-Kong.

Heiser gives an account of the sanitary measures employed wherever a human or rat case occurred. These in no way differed from those customary on such occasions. The fumigation of the sewers was carried out with SO_2. The fumigation was always accompanied by a high rat mortality from the traps and poison which were used regularly. Arsenious acid and rice boiled together 1 : 5 made the most successful bait.

The rats of the water front remained free from infection up to the time of writing so that it seems most probable that if the disease were introduced by rats it must have been in cargo. The possibility of bed bugs having been the cause of the introduction of the infection is considered and dismissed.

W. J. P.

Goff (A. P.). **Bubonic Plague in Manila.**—*Jl. Amer. Med. Assoc.* 1913. June 28. Vol. 60. No. 26. pp. 2042-2043.

The cause of the epidemic dealt with was obscure but it was presumed to be due to an infected rat getting ashore in cargo from some boat. In the rat-catching operations few infected rats were found, hence there appears little prospect of a serious epidemic.

The cases reported were 55 in number. All except two occurred on the north side of the river. Twenty-two cases, occurring in October, originated from an infected store-house. After cleaning and disinfection no further cases arose in connection with this building. The race, sex and age distributions of the cases are given. The outstanding feature was the large proportion of young people attacked. This it is suggested may have been due to the greater tendency of the young to go barefooted. Smears from buboes, cultures and animal inoculation were practised in the case of all patients admitted to hospital. Febrile cases showing enlarged lymphatic glands were frequently sent in as plague and these occasionally gave rise to difficulty in diagnosis. The laboratory methods were found very useful in doubtful cases, of which two are briefly described.

The femoral glands were usually the first to enlarge. Skin eruptions occurred in two cases only. Three or four cases, though originally of the bubonic type, developed bloody sputum which showed many plague bacilli.

The attendants on these cases escaped infection. The risk of such infection from cases showing secondary lung involvement was held to be slight owing chiefly to the possibility of having the windows constantly open.

Guinea-pigs left in houses from which patients had been taken became infected.

Serum from the government laboratory was used in the cases, but the author is unable to make any positive statement about its value. Twelve and one half per cent. of those attacked recovered.

W. J. P.

Fox (Carroll). **The Plague Outbreak in Iloilo.**—*Philippine Jl. of Science.* Section B., Trop. Med., 1913. Apr. Vol. 8. No. 2. pp. 119-120. With 1 map.

The outbreak in question was small, only eight cases occurring. They were in two foci a considerable distance apart. A Chinaman living in one of these had business connections with the other. Laboratory examinations of the rats caught during the continuance of and after the outbreak failed to show any infection.

That these animals played no part in the outbreak is further suggested by the circumscribed character of the foci and the sudden cessation of cases after treating the houses believed to be infected in such a way as to destroy vermin.

The author attributes the outbreak to bed-bug transmission, commencing with an imported case of human plague. In the early part of the campaign no endeavour was made to secure bed-bugs for inoculation experiments so that no direct proof of the hypothesis was obtained.

W. J. P.

Historical.

Jourdan (Victor J. P.). **Bubonic Plague: its History and Prevention.**—*Monthly Cyclopedia & Med. Bull.* 1913. May. Vol. 16. No. 5. (Old series, Vol. 27.), pp. 270-274.

The author, from historical considerations, attributes the distribution of plague between different countries in the eighteenth and nineteenth centuries to the degree of civilisation reached by these respective countries. He discusses the various views as to the cause of plague, and how some of these prevalent amongst the ancients held sway, until about the middle of the Christian era. In the sixteenth century, as anti-plague measures, the Spanish Government forbade attendance at theatres, schools and even churches; they required the plague hospitals to be outside the city and the attendants on the patients had to wear leather suits. Bonfires had to be lighted in the evenings in various parts of the city. Early burial of the dead (within six hours) and burning of their personal effects was also enjoined. These measures were however ineffective. Various fantastic views held by reputable physicians of the sixteenth and seventeenth centuries are discussed. As a result of the great epidemic at Marseilles in 1720 the systematic study of plague from the clinical and preventive sides received a great impetus. Several collaborators at Montpellier wrote a very full two-volume work on the subject.

Many French scientists visited the East to study the disease during the eighteenth century but without much result. In the early part of the nineteenth century various commissions went to the Orient for the same purpose; the one presided over by Ballard de Meru advocated the improvement of the hygenic conditions of life and the deeper burial of the dead as preventive measures, and mercury and iodides as medicinal treatment. The history of the demonstration of the parts played by rats and the rat flea in the transmission of the disease is discussed. The author has some pertinent observations to make on the perfunctory way in which ship fumigation for rat destruction is usually carried out and makes suggestions for improvements in the method.

He very reasonably suggests that Medical Officers at Ports should have a thorough knowledge of ship construction in order to be able to direct this work with intelligence.

W. J. P.

SUDHOFF (Karl). **Syphilis und Pest in München am Ende des 15. und zu Anfang des 16. Jahrhunderts. (Eine Urkundenstudie).** [Syphilis and Plague in Munich towards the end of the 15th and beginning of the 16th Centuries.] — *München. Med. Wochenschr.* 1913. July 1. Vol. 60. No. 26. pp. 1439-1443.

The sources from which Sudhoff draws his information are the proceedings of the town council from the years 1459 to 1507 and as a check upon these the official finance records for the same period.

The town at the time in question had a population of about 10,000 inhabitants. In February 1474 suspicious cases occurred in the city, while later in the year accounts of works of charity directed to turn away the plague appeared in the official records. On September 29th, 1474, a mass celebrated the cessation of the epidemic.

The account of the proceedings of the council were at this time sparse, but in the bad plague year of 1483 they were much fuller. The disease ceased to rage severely early in 1484, though at this time a note appears to the effect that the mayor is still out of town on account of it. The medical staff of the town stuck to their posts and received their salaries during the whole plague period. The salaries of surgeon, physician, and midwife, as paid by the city, appear regularly in the accounts.

In 1483 apart from pilgrimages and religious exercises in order to remove the plague the following more strictly hygenic regulations were enjoined. (1) Streams had to be kept clean, (2) Excreta had to be regularly removed, (3) The people's bread had to be officially inspected, (4) Noises on the street were suppressed because of their psychic effect, (5) The movements of beggars were regulated. In addition to these arrangements many others were made which Sudhoff suspects had a hygienic origin.

The account of the expenses attendant on the upkeep of plague patients is fully gone into, this including the amounts paid to midwives for opening buboes. The mortality of the epidemic is indirectly obtained from the number of persons buried from the "Bruderhaus" and other considerations.

In 1495 a further slight plague epidemic occurred. The town finance accounts of this year again give a list of payments for the opening of buboes and during the same month an increase in expenses for the disposal of the dead.

W. J. P.

RATS AND RAT FLEAS.

ILVENTO (Arcangelo). **Hygienische Beobachtungen über Ratten und Pestprophylaxe im Hafen von Palermo (1906-1910).** [Observations on Rats and Plague prevention at Palermo.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. June. Vol. 17. No. 12. pp. 404-413.

A useful aid in the capture of rats is a sticky substance of the nature of birdlime manufactured by the firm of Panchesi in Venice. A layer of about 5 cm. in thickness is spread on strips

of wood, 50 cm. long by 20-25 cm. wide. A bait is placed in the middle. 20 rats have been caught in this way. Rats avoid traps on which they can discern the odour of man or rats. Traps should not be always baited in the same manner, nor set in the same place; they should be covered with straw, sacking, &c.

Since the year 1906 1,599 rats have been caught in the harbour of Palermo, of which 46 per cent. were *M. decumanus*, 53 per cent. *M. rattus*, and 1 per 'cent. *M. alexandrinus*. Female rats amounted to just over 40 per cent.; 9 per cent. of them were gravid. 527 rats were killed by chloroform, and were subjected to a complete bacteriological examination; none were infected with plague. Small subcutaneous abscesses were found in 12, caused by common pus-producing bacteria. Cysts in the liver due to *Hymenolepis nana* were frequently observed.

122 fleas were taken from 527 rats, of which 65 were *Loemopsylla cheopis*, 41 *Ceratophyllus fasciatus*, and 6 *Ctenopsylla musculi*. The fleas were examined microscopically after they had been rendered transparent by boiling for a few minutes in caustic alkali, and subsequent transfer to glycerine.

C. B.

Strickland (C.). **The Bionomics of the Rat-Flea.**—*Brit. Med. Jl.* 1913. May 31. p. 1160.

Bacot (A. W.). **The Bionomics of the Rat-Flea.** [Correspondence.]—*Ibid.* June 14. p. 1299.

Nicoll (see this *Bulletin*, Vol. 1, p. 66) found rat-fleas, *C. fasciatus*, alive in cage sweepings which had been kept in a glass vessel for more than a year. Finding larvae at the end of the experiment he inferred that the fleas had bred in captivity. Strickland observed living rat-fleas, *C. fasciatus*, for 18 months in such refuse, but as he could not discover larvae or pupae, he came to the conclusion that adult rat-fleas can live in rubbish for a year and a half. To ascertain that they were not multiplying in confinement, he removed all the fully grown fleas by introducing a live-bait, and then examined the material for fleas every day for four months without discovering any; hence he thought that there were neither larvae nor pupae in the detritus. The number of fleas in the refuse greatly diminished in the hot weather; had larvae been present in the sweepings, the fleas should have increased, for according to Nicoll the developmental cycle is shortened to ten days, if the atmospheric conditions are warm and moist.

He concludes that the adult flea survives great lengths of time without food.

Bacot states that the egg stage of the rat-flea, *C. fasciatus*, lasts from 4 to 12 days; the active larval stage from 10 to 114 days. The larva may remain in its cocoon for more than 400 days, while the pupal period may go on from 10 to 12 days. After shedding its pupal envelope, the mature flea may remain in its cocoon for three weeks or more. By allowing fleas to bury themselves in sand at a temperature of 45° to 50° F. in a damp cellar he found that they lived without food for 95 days. When the fleas were

placed in a filter paper which was buried in sand, they survived starvation 31 days only.

He infers that the occurrence of adult fleas in breeding cages long after the host has been removed, is to be accounted for by the larval forms remaining within the cocoon.

C. B.

Creel (R. H.). **The Rat. A Sanitary Menace and an Economic Burden.**—*U.S. Public Health Reps.* 1913. July 4. Vol. 28. No. 27. pp. 1403-1408.

The consideration of the rat from the sanitary standpoint is extremely brief. On the economic side an attempt is made to estimate the loss resulting to the U.S.A. from rats. The basis of the calculation is the rat census and a consideration of the damage which is effected by these rodents. In San Francisco the rat population has been shown by trapping percentages to exceed the human, while in Porto Rico it has been estimated to equal it. Creel believes that the rat population of the U.S.A. is at least equal to the human.

He estimates the daily upkeep per rodent at half a cent and gives many instances of the enormous havoc wrought by rats in the matter of corn, chickens, eggs, &c. The loss to the cane growers in Porto Rico from rats alone has been estimated at the experimental station there as 75,000 dollars per annum.

If in the U.S.A. one half a cent per day be taken as upkeep and the rat population be taken as equal to the human the cost to the country reaches 167,000,000 dollars per annum.

The author also discusses the possibility of rat clearance; the fecundity of the rat is shortly touched upon and the methods of an anti-rat campaign are dealt with, special attention being paid to the means of rendering dwellings rat-proof.

He believes that traps are frequently relatively useless because they are badly placed. They should be somewhat concealed by scattering meal, &c. upon them, while pieces of straw sacking or rubbish can be so arranged as just to leave the mouth free. Only the bait must be available as food, a striking illustration of this point is given.

W. J. P.

Grubbs (S. B.) & Holsendor (B. E.). **Fumigation of Vessels for the Destruction of Rats.**—*U.S. Public Health Reps.* 1913. June 20. Vol. 28. No. 25. pp. 1266-1274.

The authors believe that sulphur fumigation is still the most suitable method of getting rid of rats in vessels. It is they say efficient, cheap and safe.

They quote in detail the interesting Report of the Board of Health on Plague in New South Wales, dealing with the difficulty experienced in getting rid of rats in the case of the vessel "Innamincka." This is followed by an account of the fumigation of a series of vessels, in which, various points in the technical practice of the authors are indicated. In fumigating they require all dunnage or lumber to be slung up, not resting

on the floor, all pipe casings must be opened, the sheathing of vessels must be well opened up, and all openings admitting rats must be permanently closed. Their illustrative cases show how neglect of these precautions prevented the successful fumigation of vessels, living rats being found in these localities, though the fumigation had been carried out with as much as five times the official amount of sulphur recommended. The difficulty occasioned by the main deck is illustrated by several cases, sails, bins and living quarters being infested when the holds were free from rats. This is important from the fact that rats here are so liable to get ashore from the decks. The authors describe a series of experiments carried out on ship-board in which rats were placed in dunnage, pipe casings, &c., and exposed to sulphur fumes. A further series carried out ashore in a small, wooden, one roomed building is described, which shows that 3 per cent. SO_2 acting for six and a half hours was required before the experimentally exposed rats were killed.

The authors recommend in conclusion 4-5 per cent. SO_2 (obtained by using 5 lbs. of sulphur to every 1,000 cubic feet) for the living quarters and engine room, so that seven hours will fully suffice, while for the hold they believe that 3 per cent. for twelve hours is sufficient.

They describe the usual routine practised at San Juan, Porto Rico, which appears to be very thorough. It is carried out by a specially trained fumigating crew of eight persons, and is so organised that it operates quickly and effectively. A complete supervision of every part of the vessel, simultaneous fumigation of empty rooms and holds, exposure of all nooks and crannies and no concessions to protests are the order of the day.

W. J. P.

Berdnikow (A. I.). **Einige neue Ergebnisse über die Epidemiologie der Pest. Untersuchungen der Nagetiere der Astrachanschen Steppe.**—[Some New Results in the Epidemiology of Plague. Examination of the Rodents of the Astrachan Steppes.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. June 4. Vol. 69. No. 4. pp. 251-259.

In the neighbourhood of Chutor Romanenko, 85 versts (56 miles) north-east of Rachinka where there had been a sudden outbreak of bubonic plague, and 40 versts south-west of Bykowa, an important mart on the Volga, 136 ground-squirrels, 82 jerboa (Dipus), 4 marmots, and 5 field mice were caught.

A ground-squirrel and a jerboa were found to be infected with virulent plague bacilli. In another ground-squirrel signs of chronic plague were discovered, necrotic areas containing virulent plague bacilli being present in the liver and spleen. The animal had been inoculated with the spleen of an apparently healthy jerboa. In all probability the lesions found in the ground-squirrel ante-dated the inoculation.

It seems that there was an epizootic of plague among the ground-squirrels in July which had died out at the end of September when this enquiry was commenced. Signs of acute plague were not

observed in any of the infected rodents. In many animals plague-like bacilli were seen on microscopical examination, but cultures and inoculations failed. The author thinks that these might have been infections with weakened *B. pestis.*

The ectoparasites of the animals were not investigated. He thinks, however, that it is very probable that fleas are the transmitting agents.

C. B.

TREATMENT.

LEMAN (Isaac Ivan). **The Treatment of the Plague.**—*Southern Med. Jl.* 1913. July. Vol. 6. No. 7. pp. 446-448.

The author reviews briefly the methods of active immunity as applied to plague. The production and administration of Haffkines' prophylactic and Pfeiffer's vaccine, Lustig and Galleotte's alkaline nucleo-protein solution, Terni and Bandi's peritoneal exudate vaccine and Strong's attenuated living vaccines are considered.

The results of the use of antiplague serum are touched upon and lastly the symptomatological treatment is discussed. The paper is sketchy and does not contain anything new.

W. J. P.

LEPROSY.

Bayon (H.). **A Critical Review of Recent Experimental Leprosy Research.**—*S. African Med. Rec.* 1913. June 14. Vol. 11. No. 11. pp. 201-222. With 4 plates.

References are given to the reports of more than 20 investigators who have attempted to grow the leprosy bacillus. Kedrowsky isolated non-acid-fast bacteria from the nodules of three lepers, passed them through animals, and obtained acid-fast organisms, from which pure cultures were grown. These bear a close resemblance to avian tuberculosis. Multiplication which takes place only on special media at 37° C., is generally apparent in 10-14 days. Bayon considers that Kedrowsky's culture is true leprosy, but that those of most of the other workers are not. He himself isolated from leprous nodules two non-acid-fast organisms which became acid-fast after passage through animals. His cultures are not pathogenic to guinea-pigs or fowls.

In his survey of the experiments in the transmission of leprosy to animals by inoculation of human virus, he regards the results obtained by Melcher and Ortmann, Wesener, Wnoukow, and by himself as successful. Metastases of acid-fast bacteria were found in the organs of a small percentage of rabbits which had been inoculated 4-10 months previously with lepromata. Bayon's own experiments are described in this *Bulletin*, Vol. 1, No. 4, p. 196. He concludes that—

"1. Leprosy can under certain circumstances be transmitted to animals, the main difficulties being the high percentage of unsuccesses and the long incubation.

2. The most suitable animals appear to be the rabbit, rat, or mouse. In the rabbit the intraocular method is preferable. The resulting lesions in the inner organs are often not visible to the naked eye, and are similar to those caused by certain strains of human tubercle.

3. In the rat the incubation is also very long, the resulting lesions comparable to those occurring in spontaneous leprosy of the rat.

4. Not all leprous patients' nodules are equally "infective" for animals. In some cases the lepra bacilli appear to be absolutely incapable of multiplication, for reasons we do not at present know."

Bayon believes that rat leprosy is related to the human infection. He succeeded in isolating from a rat which had been inoculated with a nodule from a leprous rat, an acid-fast rod which resembles avian tubercle in its microscopical and cultural characteristics; but he failed to find this organism in many other leprous rats.

He has used the complement deviation test in distinguishing between the various acid-fast cultures. By using various dilutions of antigen combined with corresponding dilutions of leper serum slight differences may be observed. Kedrowsky's culture when used as antigen deviated the complement in dilutions which failed to do so with Duval's and Rost's bacilli.

The test has been applied to the diagnosis of leprosy. It fails in early anaesthetic cases.

Though Leboeuf and others have studied experimentally the question of insect carriers of leprosy, no positive results have been recorded. Prolonged contact between the healthy and the diseased under insanitary conditions seems necessary for leprosy to be transmitted, and then probably not more than 5-10 per cent. become infected.

C. Birt.

FRASER (H.). **Report from the Institute for Medical Research [Kuala Lumpur, Federated Malay States] for the period October 1st, 1912, to March 31st, 1913.**—Received in Colonial Office, June 30th, 1913.

H. Fraser has continued his attempts to cultivate the *B. leprae* [see this *Bulletin*, Vol. 1, pp. 732-733.] 373 inoculations were made of the bacilli obtained from non-ulcerating nodules of 32 lepers, and the tubes were incubated for periods extending to 9 months, but no multiplication was observed on any occasion. Blood, serum placenta, salt solution, Ringer's fluid, and milk were among the media employed, aerobically and anaerobically.

Diphtheroid bacilli were isolated but are considered of no importance on account of their ubiquity. He thinks that the investigators who have described the transformation of a non-acid-fast into an acid-fast organism were deceived by transferring unwittingly lepra bacilli along with their saprophytes. He protests against applying the term acid-fast to bacteria which retain the stain only after momentary immersion in weak acid.

Inoculations of leprous material have been made into 20 animals including a gibbon; no transmission has been observed.

C. B.

SYMPTOMATOLOGY.

IMPEY (S. P.). **Symptomatology and Diagnosis of Leprosy.**—*S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 239-245.

After an incubation period of about 2 years tubercular leprosy is ushered in with a febrile attack lasting a few days, which generally recurs several times. Erythematous patches appear on all parts of the body. Most of these soon fade except those on exposed surfaces, some of which become nodular; the scalp, however, escapes. In cold climates the tubercular cases are twice as numerous as the anaesthetic, and the nodules are scattered on most parts of the body and seldom break down; in S. Africa 70 per cent. of lepers suffer from the anaesthetic type, and in the tubercular lepers the nodules are confined to exposed surfaces and generally ulcerate. If the nodules are smooth and soft life is prolonged about 8 years, if they are small and hard 20 or 30 years. In the acute forms there may be sloughing of the infiltrated tissues. The author thinks that it is doubtful whether leprosy attacks the lungs, and that acid-fast bacilli in the lungs of a leper are probably tubercle bacilli. Death is caused most frequently by tuberculosis, or amyloid disease of the kidneys and intestines. Leprosy bacilli appear early in the nasal secretions, but sometimes the examination must be repeated several times before they are detected. Elephantiasis, Madura foot and syphilitic ulcers may be mistaken for tubercular leprosy.

Anaesthetic leprosy begins with severe neuralgic pains throughout the body but especially in the arms, legs, fingers, and toes. Erythematous patches appear, the size of which varies from one to several inches in diameter; some fade. The bacillus attacks the trunks of the ulnar, peroneal, and facial nerves only, but if the case is of more than 4 years standing it is seldom possible to find any leprosy organisms in these nerves. The neuritis never extends to the brain or spinal cord, and does not reach far above the knee and elbow joints. Recovery may be permanent after a mild attack of anaesthetic leprosy; a boy, one of a family of lepers, suffered from pains in his hands and feet, and numbness of his little fingers for 6 months, after which the symptoms disappeared; ten years later he was still in good health. In early cases of anaesthetic leprosy it is impossible to find leprosy bacilli; lead, arsenic, and alcohol cause neuritis which may resemble anaesthetic leprosy. The erythematous patches, and the facial paralysis of leprosy are then of diagnostic importance. In syringo-myelia the fingers are contracted and rigid, but the hand has not the claw-like appearance of the leper hand; the fingers are not rigidly contracted in leprosy. There are no anaesthetic areas in syringo-myelia.

C. B.

Wood (D. J.). **The Eye Complications of Leprosy.**—*S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 245-246.

In anaesthetic leprosy up to sixty years of age, the eyes are affected in more than half the cases. Ninety per cent. of tubercular lepers suffer from eye diseases in the first ten years of the malady; nearly all who survive longer are blind. In the former type paralysis of the orbicularis, ectropion of the lower lids, epiphora, corneal opacity and ulceration succeed each other. In tubercular leprosy the bacilli invade the lids, conjunctivae, sclerotic, cornea, and iris. Paralysis of the ciliary muscle is an early sign of iridocyclitis which attacks a large proportion of tubercular lepers. In iridocyclitis acute pain is uncommon, but photophobia which is not amenable to treatment may be intense. Iridectomy has no prophylactic action. Treatment is hopeless.

C. B.

Miller (Thomas). **Early Diagnosis of a Case of Leprosy much assisted by the X Rays.**—*Lancet.* 1913. July 26. p. 219. With 2 text-figs.

A Chinaman aged 22, had noted that his left great toe had been diminishing in size for 2 years. Only an atrophied proximal phalanx could be felt, and there was anaesthesia of the skin over the great toe and the next.

Skiagrams showed loss of the terminal phalanx of the great toe, and partial absorption of the proximal phalanx and of the terminal phalanx of the second left toe. Rarefaction was beginning in the distal phalanges of all the other toes of both feet.

C. B.

LAGANE (L.) & COLOMBIER (P.). **Formule Sanguine de Lépreux séjournant en France.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 418-423.

The blood counts of eight lepers who were in good health for the most part, varied considerably, hence they are no aid in the diagnosis or prognosis of leprosy. In the early stages, if the general health is good, there is little anaemia; later this becomes more pronounced, and during the exacerbations of the infection it may be great. There may be leucocytosis or leucopenia. Leucocytosis (14,000, 18,000) was observed both in febrile cases and in early anaesthetic leprosy. The percentage of mononuclears was above the normal in 4, and was normal or below the normal in the other four. In nodular leprosy the medium-sized mononuclears are increased. There was an augmentation in the large mononuclears during a febrile attack (one case) and in two lepers advanced in the course of the disease. The eosinophiles were in the normal ratio or below the normal in 5 of 8 cases. Of the remaining 3 they numbered 5 per cent. in 2, and 10 per cent. in the third which was in the first stage of the infection.

The Wassermann test was positive in 5 of 7 cases and negative in two, one of which was in the early stage of anaesthetic leprosy.

C. B.

VARIOUS.

THIBAULT (E.). **De Quelques Recherches sur la Valeur comparée du Mucus nasal, du Suc ganglionnaire, et du Sang pour le Diagnostic de la Lèpre.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. June. Vol. 4. No. 6. pp. 293-298.

According to Marchoux rat-leprosy bacilli may be found in the superficial glands of healthy rats. Leboeuf discovered leprosy bacilli in the glands of an early case of anaesthetic leprosy, but failed to do so in the glands of four healthy contacts. Sorel obtained positive results on examination of the glands of 8 out of 19 lepers, and of 2 out of 15 contacts.

Thibault examined the nasal secretion provoked by iodides, the glands, and the blood of 30 lepers; the leprosy bacillus was found in the nasal mucus of 20, in the glands of 18, and in the blood of 7. In no case was it found in the gland when it was not detected in the nasal discharge.

C. B.

SUGAI & MONONOBE. **The Examination of Lepra Bacillus in Circulating Blood of the New Borns.**—*Sei-i-Kwai Med. Jl.* 1913. July 10. Vol. 32. No. 7. (Whole No. 377.) pp. 102-103. (Original in *Jl. Tokyo Med. Assoc.* 1913. Vol. 27. No. 8.)

Leprosy bacilli were found in the placenta of 2 out of 5 mothers who were suffering from anaesthetic leprosy, lepra cells were present in two. Bacilli were discovered in two out of seven placentas in tubercular leprosy, and lepra cells in four. Leprosy

bacilli were present in the blood of 10 out of 12 of the newly born offsprings of these lepers, and in the blood of a seventeen month-old child of an infected mother, which died of pneumonia.

C. B.

TREATMENT.

DAVIES (Thos. Sydney). **Notes on the Specific Treatment of Leprosy by means of a Cultural Extract.**—*S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 247-248.

A European girl aged 8, had suffered from dusky red maculae on her face, trunk and limbs for 9 months, received 17 injections of an extract made from Bayon's bacillus in the course of 3 months. The maculae became red and inflamed a few hours after the injections, but soon improved. Six months later those on the body and limbs were almost invisible, but those on the face persisted, although they had faded to a great extent. The remedy was tried on six other lepers, but the results are not reported.

C. B.

VEILLON (A.) & LAGANE (L.). **Action défavorable de l'Arsénobenzol dans la Lèpre.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 415-417.

The authors quote Jeanselme who collected the results of many observers on the action of salvarsan in leprosy. He concluded that it has no beneficial effect. Monte-Santo, however, claims to have cured one case out of four to which the remedy was administered. The authors gave five intravenous injections of 0·3-0·6 gram of salvarsan to a man who had been suffering from the mixed type of leprosy for 3 years. Six days after the last dose he was seized with severe pains in his legs; the skin became greatly infiltrated, and he was much reduced by fever which continued for six weeks. Although some of the infiltration into the skin disappeared, the leprosy lesions advanced rapidly. The Wassermann reaction remained positive before and after the injections. A woman afflicted with mixed leprosy for 5 years received two intravenous injections of 0·25 and 0·2 g. of salvarsan. This was followed by fever which lasted two and a half months, and by solid oedema of the face and limbs, which subsided partially, but the leprous processes appear to have been aggravated. The Wassermann reaction was negative throughout. Five doses of 0·5 g. were given to a case of anaesthetic leprosy of 2 years' standing; no reaction or change in the condition was noted. The Wassermann test was negative.

C. B.

HEYMANS (A.). **Surgical Treatment of some Eye Affections in Lepers.** *S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 246-247.

The most common eye affection is lagophthalmos, which soon causes epiphora and corneal ulcer. This may heal under atropine, iodoform, aristol, and dionine, but relapses are frequent. To

remedy the lagophthalmos the author dissects a flap of skin from the outer third of the lower eyelid, and stitches it to a corresponding area denuded of skin in the upper eyelid. The lower paralysed eyelid is supported by this means. It may be necessary to carry out a similar operation on the inner third of the lower eyelid. Corneal ulcers may perforate and set up iritis which leads to blindness. Many cases of iritis in lepers resemble that seen in syphilis.

C. B.

SANDES (T. Lindsay). **The Surgery of Leprosy.**—*S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 229-233.

The administration of general anaesthesia requires great caution, local anaesthesia with 2 per cent. novocaine is to be preferred, or spinal analgesia with stovaine. The operation area should be washed, swabbed with alcohol, and painted with 1 per cent. alcoholic solution of iodine 24 hours before the operation, when the process is repeated. Strong antiseptics are to be avoided; creolin hycol, and hysol are suitable for ward use. Chromicised catgut is better than silk for buried sutures.

Syphilis is found in about 8 per cent. of lepers. The author gave intravenously 7 or 8 full doses of salvarsan to lepers without observable effect.

Tuberculosis of the lungs, glands, spleen, liver, kidneys, joints, peritoneum, testes, or meninges was noted in 50 per cent. of leper autopsies.

Only two cases of malignant disease occurred in 600 lepers in the course of two years.

A leper was given 239 grains of lead salts over a period of 6 months before lead poisoning came on, manifested by permanent deafness and temporary epilepsy.

Nearly all lepers suffer from ulcers; rest is often essential; skin grafting may be required. Operations for the removal of necrosed bone in the hands and feet are frequent. Necrosis of the nasal septum rarely leads to infection of the adjoining sinuses.

Excision of the thickened portion of the ulnar nerve aggravated the symptoms. Tracheotomy is indispensable in the laryngeal obstruction of late nodular leprosy. Atrophy of the testes constantly occurs in European leprosy.

Iridocyclitis is very chronic. A delay of one or two years is advisable after its subsidence before an iridectomy and lens extraction are performed; the results are often bad. Plastic operations for the relief of ectropion which leads to corneal ulceration may be necessary.

C. B.

MORROW (R.). **The Care of the Leper.**—*S. African Med. Rec.* 1913. June 28. Vol. 11. No. 12. pp. 234-239.

Leprosy is spreading in parts of South Africa; in 1895 there were 148 lepers in Basutoland, in 1912, 700. It is probable there are 4,000 lepers, almost exclusively natives, in British S. Africa, of whom a large proportion is at large. Nodular and

anaesthetic cases should be segregated separately; those infected with tubercle should be isolated. The segregation of lepers is necessary, but their surroundings should be as comfortable as possible, and they should be allowed congenial occupations and amusements; moreover fewer restrictions need be placed on long-standing anaesthetic cases, in which it is probable that the lepra bacilli have died. Robben Island where many of the Cape Colony lepers are segregated, is a barren and bleak storm-swept island two miles in length, and less in breadth. The frequent fogs and absence of vegetation make it an inhospitable spot, residence in which adds to the misery of the leper.

C. B.

Leprosy in Rats.

Ridlon (J. R.). **Note on Leprosy in Rats.**—*U.S. Public Health Reps.* 1913. July 11. Vol. 28. No. 28. pp. 1447-1448.

In the last quarter of 1912 5,700 rats were examined at Mayaguez, Porto Rico; in three, subcutaneous nodules, some of which had ulcerated through the skin, enlarged axillary glands, and patches of alopecia were present. Acid-fast bacilli were numerous in the skin lesions and in the swollen glands, but none were discovered in the viscera. There is human leprosy on the island.

C. B.

Leboeuf (A.) & Salomon. **Note sur la Lèpre des Rats en Nouvelle-Calédonie.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 484-485.

Rat-leprosy exists in two forms in New Caledonia; the more common is the glandular; four in 136 rats examined were thus affected. Much rarer is the musculo-cutaneous and visceral infection, for one instance only was discovered in 307 rats inspected. In this animal, the loss of hair in patches, the nodules in the skin, many of which had ulcerated, the great enlargement of the lymph glands and the nodules in the liver and lungs completed the picture of this type of the disease. Rat leprosy bacilli were present in all parts of the body.

C. B.

BERIBERI.

Etiology.

Eijkman (C.). **Ueber die Ursache der Beriberikrankheit.** [On the Causation of Beriberi.]—*München Med. Wochenschr.* 1913. Apr. 22. Vol. 60. No. 16. pp. 871-872.

In a short note the author makes a correction of a mis-statement of his views relating to the etiology of beriberi, made by Wieland in No. 13 of the *Münchener Medizinische Wochenschrifts*, and draws attention to the fact that Vordermann's careful observations were not made (as would appear from Wieland's representation) before, and independently of Eijkman's experiments on animals, but after them and with his advice.

P. W. Bassett-Smith.

Schaumann (H.). **Zu dem Problem der Beriberi-Aetiologie. ii.** [On the Problem of Beriberi.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. July. Vol. 17. No. 13. pp. 433-445.

The author states that he would have preferred to have postponed further remarks upon the above subject until he has terminated the experimental work which he is now carrying out, but he feels compelled to answer some of the objections brought against his previous work. He cannot admit that Eijkman has ever taken up a clear standpoint with regard to the present problem, as he always appears to return to the intoxication theory. It is noted that Grijns first advanced the partial starvation theory of beriberi, proof of which was established by Wieland and elaborated by Nocht and Schaumann. The author points out that two different pathological processes, which depend upon different causes, are in question. The paresis and paralysis, which are easily cured by the antineuritic nitrogen base, appear to be due to a want of "driving energy" for the various nervous processes which can be supplied by the Vitamine: secondly the alterations in the nervous tissue which can only be attributed to metabolic changes (probably in the phosphorus metabolism)—cannot be remedied by the ingestion of an antineuritic phosphorus free nitrogen base. The action of the natural protective substances such as yeast, rice bran etc., depend upon the combined effect of a number of different substances. The antineuritic components cure functional nervous disturbances, but the pathologically demonstrable nervous changes, both chemical and structural, are due to defects in nourishment and a deficiency in phosphorus compounds. In the former there may be no loss of weight, in the latter it is generally marked—both of these conditions are found in beriberi, being most marked in the atrophic forms. In ship beriberi nervous degeneration has only occasionally been observed and these cases are generally rapidly cured by a change of diet containing organic phosphorus compounds, as is also the case in those forms of beriberi attacking well nourished individuals who suffer from paresis without loss of weight or nerve degenerations. The action of nucleo-proteid which Schaumann originally assumed to be the protective body has

received some confirmation from FUNK's experimental work. The reply to FUNK's objection that the body obtained by the author was allantoin, and the priority of the separation of the protective substance, are discussed rather fully—but it is recognised that FUNK was the first to prepare the active nitrogenous base from alcoholic rice extracts. In conclusion the author considers that the very varied results of the many investigators in the preparation of the curative substance proves the uncertainty of the methods as yet used.

P. W. B.-S.

i. LINDSAY (J. W.). **Etiology of Beri-Beri.** [Memoranda.]—*Brit. Med. Jl.* 1913. July 5. p. 20.

ii. LAIDLAW (J. D.). **Etiology of Beri-Beri.**—*Ibid.* pp. 20-21.

iii. FENTON (E. G.). **Etiology of Beri-Beri.**—*Ibid.* 1913. June 14. pp. 1271-72.

(i). The following statements are made: (a) that beriberi occurs in the southern Amazon regions and Matto Grosso in people who have never eaten rice of any kind; (b) that people who have been eaters of polished rice all their lives without any evidence of beriberi, develop the disease when living in the endemic district of Matto Grosso; (c) that cases occur among the agriculturists of Matto Grosso, who eat home-cleaned rice, brown in the grain. From these observations the author is unable to accept the food theory of the etiology of beriberi, but believes that the causative agent is to be found only in the endemic district.

(ii). In the records of the Candelaria hospital, Porto Velho, Brazil, there were 963 cases of beriberi out of 30,430 admissions for the period of 1908-1912. The writer, who contracted the disease, states that rice is very little used and is not causative of the disease, though there may be deficiency in other foods.

(iii). In a short note the author, from ten years' experience in Southern Nigeria, is not prepared to accept the "deficiency theory" as explaining the cause of beriberi. He states that in this happy country young men live as well as in England, the dietary being excellent and varied with practically no polished rice; yet beriberi is found. He asks, what substance is it that is absent?

[The very rosy picture of life in Southern Nigeria is rather different from that usually given. Clinicians generally fail to appreciate that rice is not an essential element in the causation of beriberi, but when, as in the far east, it forms the staple diet the consumption of the polished form is generally followed by the disease. A great monotony of diet and the absence of an essential property (whether from rice, wheat, maize, potatoes etc.) with conditions of life in which metabolic processes are diminished, as from heat, exposure, humidity, and irregular exercise, favour the production of beriberi all over the world. It is probable that the African and American forms vary, both clinically and etiologically, slightly from the typical oriental variety.]

P. W. B.-S.

Chemical.

Cooper (E. A.). **The Preparation from Animal Tissues of a Substance which cures Polyneuritis in Birds induced by Diets of Polished Rice. Part 1.**—*Biochemical Jl.* 1913. May. Vol. 7. No. 3. pp. 268-274.

A detailed description is given of analytical experimental work upon the separation of the antineuritic substances effective on pigeons: from which the following conclusions are formulated:—(1) A fraction rich in the antineuritic substance can be precipitated from the fats and lipoids (alcoholic extracts) of various animal tissues by means of ether. (2) A method based on this observation is described for isolating a substance from horse-flesh, small amounts of which can cure polyneuritis in pigeons. (3) The substance is insoluble in absolute alcohol, benzene, chloroform, ether, and ethyl acetate, but it is moderately soluble in water. (4) The substance is absorbed to some extent by animal charcoal and is readily destroyed by alkali. It is not inactivated by sulphuretted hydrogen, but disappears in large amounts during chemical operations in which colloidal metallic sulphides are formed. (5) Quinine and cinchonine exert a temporary curative action upon birds affected with polyneuritis. After being heated at 125 deg. for 6 hours, however, quinine has no ameliorative effect, so that its curative properties would appear to be due to its contamination with traces of the antineuritic substance derived from the cinchona bark. (6) The administration of small doses of alcohol to birds fed on polished rice does not affect the period of time elapsing before the occurrence of polyneuritis, and thus appears not to influence the utilisation of the supply of antineuritic substance distributed in the tissues of the birds. This suggests that alcoholic neuritis does not result from a diminished capacity of the organism to utilise the anti-neuritic substance.

P. W. B.-S.

Eijkman (C.). **Ueber die Natur und Wirkungsweise der gegen experimentelle Polyneuritis wirksamen Substanzen.** [The Nature and Action of Substances efficacious against experimental Polyneuritis.] — *Arch. f. Schiffs- u. Trop.-Hyg.* 1913. May. Vol. 17. No. 10. pp. 328-335.

The author reviews critically the modern work which has been carried out bearing on the etiology of polyneuritis of birds and beriberi in man. He fully recognises that Funk's work is a distinct step forward, but thinks his deductions must be accepted with some reserve, and he states that it still remains to be seen whether "Vitamines" would have the same curative effect on fowls as upon pigeons, seeing that the clinical picture presented by the two birds is different. Dr. van Hoogenhuyze obtained a crystalline substance from rice bran, which given subcutaneously, had a strong curative action on pigeons fed on polished rice. This substance, at first believed to be identical with Funk's vitamine, was composed mainly of mineral compounds, the ash giving equally good results—this contained 84 per cent. KCl. Mixtures of

chemically pure KCl and NaCl in the proportion of 3-1 in 20-40 mg. doses gave very good results with pigeons, but even large doses of 300-500 mg. failed to cure fowls. The fact is proved that fowls may be cured by the addition of non-phosphoric compounds to their diet, which contradicts SCHAUMANN's phosphorus starvation theory. SCHAUMANN's latest katalytic theory is discussed very fully, and Eijkman comes to the conclusion that it is probably wrong. He also repudiates the view ascribed to him by SCHAUMANN that beriberi is caused by a poison, and that the protective body acts as an antidote. He says that the poison theory has not been entirely disproved, nor the beneficial action of the protective body as a nerve food been entirely established.

P. W. B.-S.

BARSICKOW (M.). **Experimentelle Untersuchungen über die therapeutische Wirkung der Hefe bei der alimentären, multiplen Polyneuritis der Meerschweinchen und Tauben.** [Experimental Study of the Therapeutic Action of Yeast by the Mouth on Multiple Neuritis of Guinea-pigs and Pigeons.] — *Biochemische Zeitschr.* 1913. Vol. 48. No. 5. pp. 418-424. With 1 plate.

There are a great number of preparations on the market made by drying yeast at low temperatures, most of them contain more or less living yeast cells; those known as Furonculine and Levurinose are mixed with a large quantity of starch to better preserve the living cells. "Zymin" is prepared by mixing one part of fresh yeast with fifteen parts of acetone; in this the living yeast cell is killed but the enzyme of the yeast (the Zymase, the Endotrypsin, and the Katalase) remain active. Another preparation is "Cerolin" which is quite different and contains only the fat substances of yeast extracted by hot alcohol. The number of diseases in which yeast has been given therapeutically, both externally and internally, is large, but the beneficial effect has often been much exaggerated especially in skin diseases. The different forms given have no doubt caused variations in the results, therefore it seemed useful to examine the therapeutical effects by the administration of the living cells, and the chemical products only. Chemically there are present, albumin, nuclein, fat, glycogen, carbo-hydrates, water and salts. Four groups of substances were prepared. (1). Carefully air dried fresh yeast containing 70-80 per cent. living cells. (2). Acetone preserved yeast without living cells, but with active enzymes. (3) Cerolin or the fatty substance extracted from yeast. (4) Substances from yeast heated to 120 deg., without living cells or enzymes. To distinguish which of the four groups had the greatest therapeutical value, experiments were carried out with guinea-pigs and pigeons which have been proved by SCHAUMANN and others to suffer from polyneuritis when fed on particular foods, and also to be benefited by being given yeast free from fat. 40 guinea-pigs were divided into 5 groups of 8 in each, and fed upon rice or rice with additions of one of the four above-mentioned yeast preparations; the results were unsatisfactory as all the animals lost their appetite after

8 days and died after 3 weeks. In the second experiment oatmeal was added to the rice, the weight and blood conditions were carefully recorded, but again the results were unsatisfactory—the animals dying in 3 weeks. A third experiment with 40 pigeons was more definite, those fed on *dry* rice plus the yeast preparations all got paralysis early, those having the fat product and the heated yeast died, but the results were different if the rice was given moist, then those only died who received no yeast or only the fat extract of the yeast: the pigeons receiving the heated yeast, the enzyme of yeast, or the living cells plus the enzymes did not die, but no difference was noticed between the birds in the last three groups. The conclusion the author draws from these experiments are that yeast heated to 120° C., yeast with living cells, and yeast without living cells but with enzymes had some protective effect, therefore the protective power of the yeast depends upon some chemical material in the yeast, but he was not able to ascertain whether this was due to the nuclein or the salts.

P. W. B.-S.

FUNK (Casimir). **Studies on Beri-Beri. vii. Chemistry of the Vitamine-Fraction from Yeast and Rice Polishings.**—*Jl. of Physiology.* 1913. June 19. Vol. 46. No. 3. pp. 173-179.

The results of further analytical and experimental work on the anti-neuritic substances contained in yeast and rice polishings are given in detail. In addition to the experiments on pigeons by the author, it is noted that Prof. CUSHNY has shown that these substances possess no marked action on blood pressure, respiration, and the heart. The vitamine-fraction in each instance is found to be complex, consisting of more than one substance. The following conclusions are given:—(1) The vitamine-fraction from yeast has been separated into three substances: a substance of the formula $C_{24}H_{19}O_9N_5$, a substance of the formula $C_{29}H_{23}O_9N_5$ and what appears to be nicotinic acid (m-pyridine-carboxylic acid). The first substance mixed with nicotinic acid seems to be necessary for curing pigeons.

(2) The vitamine-fraction from rice-polishings has up to the present been separated into two substances: one of the formula $C_{26}H_{20}O_9N_4$ the other nicotinic acid.

WIELAND (H.). **Neuere Forschungen über die Ursache der Beriberikrankheit.** [Recent Investigations into the Cause of Beriberi Disease.]—*München. Med. Wochenschr.* 1913. Apr. 1. Vol. 60. No. 13. pp. 706-708.

This is a short review of work done by FUNK and SCHAUMANN bearing on the etiology of polyneuritis in birds. It is stated that SUZUCKI, SCHIMAMURA, and OSAKE isolated from rice bran the same curative body, apparently independently of FUNK. The author, though he does not consider the lack of vitamine sufficient to explain the etiology of all cases of beriberi, under which term it is

probable various affections are grouped, yet acknowledges that in many cases the want of the vitamine is the cause of the symptoms. This is shown by the favourable curative results obtained by TSUZUKI when "Antiberiberin," a preparation containing vitamine, was given either by the mouth or subcutaneously.

P. W. B.-S.

PROPHYLAXIS.

VEDDER (E. B.). **The Prevention of Beriberi.**—*U.S. War Dept. Office of the Surgeon-General. Bulletin* No. 2. 1913. Jan. pp. 87-94.

Statistics have shown that in the Malay States during the last 20 years 30,000 people have died of beriberi in Government institutions alone. In 1910 there were 3,334 deaths in the Philippines, and it is estimated that 200,000 die annually from this cause alone in China. This is only a small proportion of the total cases as the mortality is about 5 per cent., therefore the total cases must run into millions. There is no doubt that the disease is a preventable one, caused by an improper dietary, which operates because of its deficiency of some substance or substances. The disease has been eradicated from the Japanese Navy and from the Philippine scouts by simple changes in their food; the latter provided 600 cases annually, now there are none. FRASER and STANTON's human experiment is absolutely conclusive, but it has been confirmed by the similar experiment of STRONG and CROWELL in the Philippines. To apply these facts in the far east is difficult, and can only be done by (1) educating the people to demand undermilled rice; such a campaign is doomed to failure, due to the inertia and dislike of oriental people to change their habits; or (2) by taxing over milled rice, making it too expensive for the poor classes. The objections to the latter are, that it would be difficult to enforce, that it would cause native discontent, and that it would derange commerce. The author recommends that International action should be taken, and that a committee of the International Congress of Hygiene should investigate this most important subject.

P. W. B.-S.

HIGHET (H. Campbell). **Studies on Beri-Beri and its Prevention in Siam: being a Report upon certain Investigations on Beri-Beri carried out in Siam by the Medical Officers of the Health Department of the Ministry of Local Government.** 46 pp. With 5 charts. Government of Siam, Ministry of Local Government. Printed by order of H.E. The Minister of Local Government. [Undated.]

This report is a valuable practical exposition of the truth of the "deficiency" theory of beriberi, from experiments made in the public services in Siam. It agrees in all essential respects with the observations made by FRASER and STANTON in the Malay States. The work extended over six years—in asylums, prisons, etc., where all the factors were under control. The author agrees

that the amount of P_2O_5 is a satisfactory indicator (minimum ·4 per cent.), and he proves that Siam rice compares favourably both in composition and prophylactic power with other forms on the market; the variations found by FRASER and STANTON being due to differences in milling. He also shows that hand or steam milled Siam rice can be readily prepared and is as efficient as parboiled rice in preventing the disease. Among other interesting facts given are the following:—In Siam, the incubative period is roughly 60 days; cases are most common in September; and the highest mortality is in young male adults. The author thinks that legislation is not at present desirable, but that white rice should be prohibited in the public services. In the asylum for the insane, which was a hot-bed of beriberi, with a mortality of 90 per cent. of those affected, alteration of the diet from polished to parboiled rice gave the following results:—

Year.	Cases.	Deaths.	Average Daily No. of Inmates.
1906–1907	116	113	86
1907–1908	119	104	94·5
1908–1909	122	122	116·5
1909–1910	0	3*	193·8
1910–1911	7	3	310
1911–1912	14	0	250

* Cases from previous year.

Parboiled rice was first issued in February, 1909. No other dietic or hygienic changes were made, and beriberi cases mixed freely with the others. This rapid check of the epidemic is very striking, and is in favour of the view that beriberi is not infectious, either from person to person, or from place to place [as found also by STRONG in his Philippine experiment].

P. W. B.-S.

TROPICAL DISEASES OF THE SKIN.

SANTAMARIA (J. Martinez). **Some Notes on Tropical Diseases observed in the Republic of Colombia.**—*Jl. Trop. Med. & Hyg.* 1913. Apr. 1. Vol. 16. No. 7. pp. 100-102.

In his interesting paper Santamaria mentions several skin diseases as of common occurrence in the Republic of Colombia.

Buba (yaws).—This disease is rife in the lower districts while it is never found in the mountainous regions. The *Treponema pertenue* is found in the lesions.

Bubon de Velez.—This term is applied to a nodular affection starting near the nose and mouth and somewhat resembling lupus. No surgical or medical treatment is of avail.

Espundia.—The author uses this term to denote a condition characterized by pedunculated nodules of unknown origin.

[The same term is often used to denote a type of leishmaniasis affecting the mucosae.]

Carate (Pinta).—This is endemic in the hot damp districts and is characterized by the presence of chromatic patches of various colours. MONTOYA has, it will be remembered, isolated several species of aspergillus and aspergillus-like organisms from the lesions of this disease.

A. Castellani.

FLU (P. C.). **Een atypisch geval van Mycetoma pedis, gecompliceerd met een blastomykotische infectie.** [An Unusual Case of Mycetoma pedis, complicated by a Blastomycotic Infection.] —*Geneeskundig. Tijdschr. v. Nederl.-Indië.* 1912. Vol. 52. No. 6. pp. 703-747. With 1 plate.

The patient, an Arab, six years previously struck the great toe of his left foot against a stone, detaching a large part of the nail. Two years elapsed before the wound healed. Some time after this a red nodule appeared in the scar which gradually developed into a tumour involving the whole of the toe and the adjoining parts of the foot. (A photograph of the condition is appended.) The lesion was not painful. The surface was nodular and covered with crusts. Owing to inflammation having set in the growth was removed by operation. Fluid from this showed, microscopically, large cellular bodies exhibiting amoeboid movements, and embedded in these were a number of round bodies about the size of a red blood corpuscle, but more refringent and having a distinct cell wall. Upon section of the tumour it was seen to be studded with grey nodules which, after treatment with caustic soda, resolved themselves into masses of mycelia and spores, the arrangement being more evident in microscopical sections. These researches showed, therefore, that mycelia and blastomycetes were present. Both organisms were cultivated. The streptothrix on agar gave a round, dry, yellow-white mass, strongly adherent to the medium and only capable of being detached in a single piece. After ten days the colour of the colonies changed to a dark brown, probably from drying of the medium. 48 hours growth examined under the microscope showed networks of threads. The organism also grew on maltose

and glycerin agar, on gelatine, on glycerin potato and in broth. On the glycerin potato, in addition to the growths of the streptothrix, colonies of the blastomycete became evident after an interval of three days. These attracted attention by their snowy whiteness and porcelain-like surface. Microscopically, when unstained, the growth showed round greenish-yellow cells from 3 to 6μ in diameter, the smaller cells being apparently devoid of a cell membrane but the larger ones presenting a distinct cell wall with double contour. The protoplasm of the smaller cells seemed to be homogenous but in the larger ones a strongly refractive granule could be distinguished. Multiplication took place by fission and by continued adhesion of the cells to one another, chains of as many as thirty individuals being formed. They were difficult to stain, Gram's method showing them up best. A description of the growth of the parasite on various media is given.

Histological examination of the tumour was carried out by means of sections stained in various ways. The nodules took the stain badly, like the caseous matter of tubercle. They ranged in diameter from 0·1 to 2 mm. and high powers indicated that they possessed a definite structure. This consisted of a radiating mass of mycelial threads, terminating at the outer ends in spores, or conidia. The threads stained best by Gram's method but seemed to lose their staining properties by age, so that the centre of the nodules then appeared colourless, the conidia alone retaining the stain. Outside the mass of mycelium and forming the wall of the nodule was a layer of leucocytes of varying thickness, while the bulk of the tumour was made up of granulation tissue. Scattered throughout this were numbers of the large amoeboid cells above mentioned; these contained blastomycetes. Probably these were hypertrophied connective tissue cells, or perhaps they were derived from the cells of the blood vessels. The included blastomycetes, many of which lay free in the tissue, stained moderately well with Gram and similar stains, but best with alum-haematoxylin and eosin. They were, however, most easily demonstrated by treating the fresh tissue with caustic soda solution.

The paper also includes a lengthy discussion of the pathology of Madura-foot, to which class of affection the author considers the present case to belong. In addition, some observations on the occurrence of blastomycetal organisms in tumours are appended.

G. C. Low.

Gougerot (H.). **Oosporoses ou Nocardoses Cutanées. Synonymie: Nocardoses, Oosporoses, Oiscomycoses, Micromycoses, Microsiphonoses, Actinomycoses, Streptothricoses.** — *Gaz. des Hôpitaux Civils et Milit.* 1913. Jan. 25. Vol. 86. No. 10. pp. 149-158; and Feb. 1. No. 13. pp. 197-204.

The author gives a full classification of the various pathological conditions due to fungi of the genus Nocardia. Some fungi of this genus are of great importance to tropical practitioners as they are found in certain varieties of Madura Foot. The

author calls special attention to the Nocardia found in that very interesting condition known as "juxta-articular nodules" characterized by the presence of large subcutaneous nodules in the proximity of the articulations. This disease is common in various arts of the tropics, Madagascar, Java, Samoa, Ceylon, and the Pacific Islands. The etiological factor is a very thin Nocardia discovered by Carougeau and the author: *Nocardia carougeam gougerot.* The mycelial filaments are very slender, ramified, without claviform swellings. Attempts to cultivate the parasite have so far not succeeded.

A. C.

DE BEURMANN & GOUGEROT. **L'Etat actuel de la Question des Mycoses. [Rapport présenté au viie Congres International de Dermatologie et de Syphiligraphie, Rome, Avril 1912.]**—Supplement à la *Biologie Médicale.* 69 pp. With 18 text-figs.

This work, which appears as a supplement to the *Biologie Médicale,* is fairly comprehensive as will be seen from a summary of the chapters.

Chapter I.—*Frequency and multiplicity of mycoses,* the chapter contains remarks on the growing number of recognized mycoses, and gives accounts of previous publications on the subject.

Chapter II.—*Sporotrichoses,* deals with the importance of the diagnosis of sporotrichosis in practical medicine, and cites several cases which were wrongly diagnosed as tuberculosis and syphilis. These became steadily worse on being treated with tuberculin and mercury, but when their true nature was determined speedily became cured on the iodo-iodure treatment. This is the longest and most interesting chapter contains the important original work done by the authors on the subject. The rest of the brochure is taken up with chapters on:

Chapter III.—Botryomycoses.
,, IV.—Blastomycoses or Exascoses.
,, V.—Oidiomycoses.
,, VI.—Oosporoses.
,, VII.—Aspergilloses and mucomycoses.
,, VIII.—Hemisporoses.
,, IX.—Tineae.
,, X.—Necessity of International conventions.

The authors have a good deal to say on the subject of scientific nomenclature and the confusion arising from the use of synonyms. They urge that a revision of scientific nomenclature has now become necessary—especially with regard to blastomycoses—and also that in giving descriptions of parasites, certain technical rules should be followed in order to facilitate the comparison of specimens, as at present descriptions differ widely.

[In the reviewer's opinion every author describing a new species of vegetable or animal parasite should follow the international rules of nomenclature, as set out by BLANCHARD and STILES.]

A. C.

WISE (K. S.) & MINETT (E. P.). **Report on Tropical Diseases Research in the Government Bacteriological Laboratory, British Guiana, for the Six Months April, 1912, to September, 1912.**—Received in Colonial Office, January 21, 1913.

Aspergillar mycosis.—The authors describe a case of generalized aspergillar mycosis in a negro woman 55 years of age, who was admitted to the Hospital of Georgetown with high fever, laboured breathing, and patches of dulness on percussion of the chest. She died a few hours later. The post-mortem examination showed at the base of the right lung an area of consolidation which on section had a honeycombed appearance. The heart and spleen were normal. The kidneys contained numerous small cysts. From the lesions the author obtained cultures of a fungus which was determined by FOULERTON as *Aspergillus fumigatus* Fresenius 1775.

[The reviewer has repeatedly called attention to the frequency of bronchomycosis in tropical countries. In Ceylon the condition may be caused by fungi of the genera *Monilia*, *Nocardia*, *Aspergillus*, *Sterigmatocystis*, *Penicillium*, *Mucor*, *Rhizomucor*, *Lichtheimia*, and *Sporotrichum*.]

A. C.

MAZZOLANI (D. A.). **L'Ulcera Fagedenica a Tripoli.**—*Policlinico.* Sez. pratica. 1913. Apr. 27. Vol. 20. No. 17. pp. 585-589; and May 4. No. 18. pp. 621-625. With 2 text-figs.

The author gives a general account of "ulcus tropicum" as observed by him in Tripoli. The clinical characteristics are similar to those described in any text-book. In a long historical account of the researches carried out on the etiology, &c. of the malady, he omits to mention the important work of PROWAZEK. He favours Vincent's fusiform bacillus as the cause of the condition. For treatment Tincture of Iodine is recommended at the very beginning; later caustics may be necessary. No satisfactory results have been obtained by using methylene blue.

[At the present time the prevalent opinion is that the cause of the disease is *Spiroschaudinnia schaudinni* Prowazek 1907.]

A. C.

SABELLA (Pietro). **Due Casi di "Granuloma Ulceroso delle Pudente" guarito col Neo-salvarsan a Tripoli.**—*Policlinico.* Sez. med. 1913. May. Vol. 20. No. 5. pp. 235-240: *Malaria e Malat. d. Paesi Caldi.* 1913. Mar. Vol. 4. No. 2. pp. 97-101.

Two cases of this disease in Tripoli are described, one a man of 35 years and his daughter of seven years of age. The clinical appearances were characteristic in both cases. The little girl's hymen was intact. In both cases spirochaetes were observed, but the author does not come to any definite conclusion concerning the etiology of the malady. Salycylic acid and methylene blue ointments had no effect, while neo-salvarsan given intravenously induced a complete cure in both patients.

A. C.

CHOYCE (C. C.) & MACCORMAC (H.). **Case of Granuloma Inguinale Tropicum.**—*Proc. Roy. Soc. of Med.* 1913. Feb. Vol. 6. No. 4. (Dermatological Sect.) pp. 87-88.

A description of a case of Granuloma tropicum in a Chinaman. The first lesions appeared in October, 1911, at the base of the penis from which the disease gradually spread to the left groin and perineal region. Ulcerative and granulomatous changes were evident and there was present a considerable degree of hardening and sclerosis. Wasseramann's reaction was negative. No organisms were found except the usual contaminations. A blood count demonstrated the existence of some anaemia together with a slight degree of eosinophilia. An injection of salvarsan was given without any apparent benefit.

In the discussion that followed SEQUEIRA called attention to a case described by him in which besides the inguinal lesions a granulomatous horse-shoe shaped tumour was present at the angle of the mouth. MACLEOD said that in his experience the best treatment was by X rays. Hayward PINCH mentioned a case in a European which was cured by scraping followed by zinc ionization. McDONAGH speaking on the etiology of the disease reminded the members that WISE had found a Spirochaete and FLU a capsulated intracellular organism in this condition.

A. C.

GRINDON (Joseph). **Granuloma Inguinale Tropicum. Report of Three Cases.**—*Jl. of Cutaneous Diseases incl. Syphilis.* 1913. Apr. Vol. 31. No. 4 (whole No. 367). pp. 236-240. With 3 plates.

The disease was first fully described by CONYERS and DANIELS in 1896. Several organisms have been described as the etiological agents: protozoal bodies, and WISE's spirochaete. The author gives a description of three cases seen by him in St. Louis during the last eight years. The clinical symptoms were typical and corresponded to the classical description of CONYERS, DANIELS and MANSON. Cultural experiments showed only the presence of pyogenic cocci. Animal inoculations were unsuccessful. The following conclusions are reached:

"1. The disease is a rare one in the United States.

2. It is characterized by a striking conformity to type.

3. The adjective *tropicum* as a part of the title of this disease is not wholly justified.

4. The disease in this country is not mainly one of women as MANSON says is the case in the tropics.

5. The negro race is especially liable.

6. The question of contagion must remain open for the present.

7. The peculiar bodies described by Donovan and Carter are not constantly present in this disease.

8. Spirochaetae are not constantly present."

A. C.

ASSMY & KYRITZ. **Ueber Salvarsanbehandlung geschwüriger Prozesse, welche durch die Vincentsche Symbiose veranlasst sind.** [Salvarsan Treatment of Ulcerative Processes caused by Vincent's Symbiosis.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. Apr. Vol. 17. No. 7. pp. 217-230. With 2 plates and 1 text-fig.

The authors have studied the action of salvarsan in cases of ulcus tropicum and stomatitis gangrenosa in which spirochaetes and Vincent's fusiform bacilli were present. Detailed descriptions of four cases are given. They come to the conclusion that the drug is a specific for such pathological conditions. The paper is illustrated with several excellent photographs, &c.

A. C.

CONYERS (J. H.). **A Case of Tinea Cruris in British Guiana.**—*British Guiana Med. Annual for* 1911. pp. 16-17.

The author describes a case of tinea cruris in a European overseer on a sugar estate. The eruption was cured by the application of an ointment containing gr. xx of chrysophanic acid to the ounce. Scrapings from the lesions were investigated by Dr. MINETT who isolated a fungus closely resembling *Epidermophyton cruris* Castellani 1905 (= *Epidermophyton inguinalis* Sabouraud 1907).

A. C.

VERRUGA PERUVIANA.

Cole (H. N.). **Verruga Peruviana: its Comparative Histological Study in Man and the Ape.**—*Jl. of Cutaneous Diseases.* 1913. June. Vol. 31. No. 6. pp. 384-392. With 1 plate.

In a previous paper the author describes some inoculation experiments made from verruga sores on to monkeys (see this *Bull.*, Vol. 1, No. 12, p. 726). He now gives the results of a microscopical examination of the tissues then obtained with representations of the growth as seen under low and high powers. In his conclusions it is stated that, (1) No organisms, either bacterial or protozoal were found. (2) The tumours in both man and monkeys resembled each other very closely in their mode of formation, and in their constituents. (3) The tumours are granulomatous in type, caused by some unknown organism, probably circulating in the blood, producing inflammation and obstruction of the lymph channels with sub-acute, inflammatory changes and necrosis. The lymph vessels become choked with mono and polymorphonuclear leucocytes, while around these are seen plasma cells, fibroblasts, mononuclears, and few polynuclear leucocytes. The capillary blood vessels are dilated and there is much extravasation of serum and red blood cells. The lymph vessels either rupture early, or become dilated, their cellular contents degenerate, and the part finally becomes invaded by plasma cells and fibro-blasts.

P. W. Bassett-Smith.

MISCELLANEOUS.

Mosquitoes and Ticks.

i. Horne (J. H.). **Notes on Distribution and Habits of Stegomyia Mosquitoes in Madras.**—*Proceedings of the Third Meeting of the General Malaria Committee held at Madras.* Nov. 18, 19, 20. 1912. pp. 197-199. 1913. Simla: Govt. Central Branch Press.

ii. Lalor (N. P. O'Gorman). **A Brief Report of the Stegomyia Survey in the Principal Ports of Burma.**—*Ibid.* pp. 201-203.

iii. Liston (W. Glen). **A Stegomyia Survey of the City and Island of Bombay.**—*Ibid.* pp. 187-188.

iv. MacGilchrist (A. C.). **Progress Report—Stegomyia Survey—Port of Calcutta.**—*Ibid.* pp. 193-196.

v. Mhaskar (K. S.). **Stegomyia in Karachi.**—*Ibid.* pp. 189-192.

A series of papers dealing with the distribution of *Stegomyia* in different parts of India. An analysis of the work brings out the fact that such insects are common in all the places mentioned. Two species, namely *Stegomyia calopus* (*vel fasciata*) and *Stegomyia scutellaris*, occur in all, with the exception of Karachi where so far the former species only has been met with.

In addition to these, other culicines such as *Scutomyia sugens*, or a species closely related thereto, *Desvoidea obturbans*, *Culex fatigans*, *Culex concolor*, *Taeniorhynchus perturbans*, &c. were found. Some of these seemed to be very frequent. The breeding places of the two species of Stegomyia would seem to be very similar, though in Calcutta MacGilchrist did not find *fasciata* breeding in wooden receptacles. *Scutellaris* on the other hand seemed to prefer such places, and hollows in bamboo stumps are also mentioned as favourite sites for it. In the principal ports of Burma, Lalor observed no distinction between the breeding grounds of the two. Most of the reports also deal with the measures required for stamping out these pests.

These are now well known and may be summed up under the heading of general domestic sanitation.

G. C. Low.

Howlett (F. M.). *Stegomyia Fasciata.—Proceedings of the Third Meeting of the General Malaria Committee held at Madras, Nov.* 18, 19, 20, 1912. p. 205. 1913. Simla Govt. Central Branch Press.

The author in discussing the characteristics of the genus *Stegomyia* states that the plan adopted to check this insect at Pusa has been to eradicate as far as possible all natural and accidental breeding places, but at the same time to supply artificial places (cut joints of bamboo filled with water) which can be emptied out every few days, and so controlled. In the case of all the Stegomyias which occur naturally at Pusa (not including *S. fasciata*) the author says that the eggs laid in the cold weather do not hatch until the following rains, lying in earth and dried mud throughout the whole dry season. In those places which

have a well marked cold or dry season the same thing will in all probability be found to happen in the case of *S. fasciata*, as its eggs are known to retain their vitality for weeks or months in a dry condition. In places with an equable warm moist climate these mosquitoes probably breed all the year round. [They do so in the tropics certainly.]

G. C. L.

WILSON (H. C.). **Some Notes on Larvicides and Natural Enemies of Mosquitoes in Southern India.**—*Proceedings of the Third Meeting of the General Malaria Committee held at Madras, Nov.* 18, 19, 20, 1912. pp. 183-186. 1913. Simla: Govt. Central Branch Press.

The author believes that for the destruction of mosquito larvae and pupae there is no better natural enemy than fish, other natural enemies of lesser value being found amongst aquatic insects and their larvae, crustacea, molluscs and larvae of non-aquatic insects; the frog should be included as an enemy of the mosquito itself especially when this insect is egg laying or resting on the pupa before its first flight.

Three different fish *Chela argentia*, *Haplochilus affinis*, and *Ambassis nama* were experimented with. All species of Chela are useful but the smaller ones are the best. The class of waters where these species would be of greatest service are tanks, swamps, and village ponds. The genus *Haplochilus*, of which DAY gives four species, are best suited for stocking wells, channels, stagnant pools and any mosquito infested waters at long distances from the breeding grounds. These fish are exceedingly good travellers and if properly prepared for a journey and not over-crowded can be kept in the same water for days together, the water requiring very little aeration.

Another genus of fish, namely *Therapon*, is suitable for stocking back-waters, salt and brackish swamps, and pools near the coast; they can also be used in fresh water ponds.

[More experimental work on such lines would be useful in determining the value of fish as mosquito destroyers.]

G. C. L.

COOLING (L. E.). **Memorandum re Predaceous Habits of Barbados "Millions"** *Girardinus poeciloides.*—MS. Report from Department of Public Health, Queensland. Received in Colonial Office July 1913.

Experiments were made to ascertain the larvivorous propensities and adaptability to environments of the small Barbadian fish *Girardinus poeciloides*.

In the tests applied the fish were found to feed readily on mosquitoes' eggs, larvae, and pupae and also adapted themselves both to large and small bodies of water. The author points out however that before any action is taken to acclimatize them in Australia, notice should be taken of the fact that they are by no means superior to the Queensland fresh water-fishes known as the

Spotted Sunfish—*Rhombatractus fitzroyensis* Castelnau, the Firetail—*Austrogobio galii*, Ogilby, and the Green Perchlet—*Priopis olivaceus*.

[In that case it seems superfluous to go to the expense of introducing the Barbadian species.]

G. C. L.

Bishopp (F. C.) & Wood (H. P.). **The Biology of some North American Ticks of the Genus** *Dermacentor*. — *Parasitology*. 1913. July. Vol. 6. No. 2. pp. 153-186. With 3 plates.

In North America more species of the genus *Dermacentor* are found than in any other part of the world, there being at least eight valid species and one variety. The species of the genus may be divided into two groups, based on their habit of moulting on, or off, the host. The group which moults on the hosts is composed of *nitens*, *nigrolineatus* and *albipictus*, that which moults off, of *hunteri*, *parumapertus*, *parumapertus* var. *marginatus*, *venustus*, *occidentalis* and *variabilis*.

Economically this genus is of considerable importance in the United States, as all of the species are of some economic significance except *D. parumapertus*, *D. parumapertus* var. *marginatus* and *D. hunteri*. The first two ticks have not been found to attack any host other than rabbits, and the last has been taken only on the mountain sheep. *D. variabilis* is of little economic importance, so far as known, because among the domestic animals it most commonly attacks the dog. However, it is sometimes taken on the larger animals and occasionally attaches itself to man. *D. occidentalis* and *D. venustus* are common pests of man and nearly all domestic animals, and the latter species, as is well known, is the transmitter of the disease of man called Rocky Mountain spotted fever. The other three species—*nitens*, *albictus* and *nigrolineatus*—are each of considerable importance as live stock pests; none of these are known however to attack man.

A detailed description of all the different species is given and the article is illustrated by three plates.

G. C. L.

Rat-Bite Disease.

Hewlett (R. Tanner) & Rodman (G. H.). **A Case of Rat-Bite Disease.**—*The Practitioner*. 1913. July. Vol. 91. No. 1. pp. 86-87.

The authors describe a case of Rat-Bite Disease which occurred in a London suburb. It was unrecognised at the time but in the light of recent observations was undoubtedly a case of this interesting disease. The patient, a male aged 23 years, was bitten by a rat on the left ring finger at the end of September, 1903. The wound was immediately washed and dusted with iodoform and this dressing was continued until the wound had healed. The wound throughout appeared healthy. About the middle of December a gland at the elbow became enlarged and tender and appeared as if it were about to suppurate. At the end of December the patient had to take to bed owing to the occurrence of rigors

and fever, the pyrexial attacks occurring about every five days for no less than seventeen weeks, when the patient completely recovered.

With the onset of the rigors and fever an erythematous rash appeared on the chest and arms, the glands in the axilla and groin also becoming enlarged. The condition was supposed by some to be tubercular but there were no signs of that disease elsewhere; there was no history of syphilis. Various remedies were tried including quinine, salicylate, arsenic, mercury, iodide, and anti-streptococcic serum, but none of these proved beneficial.

G. C. L.

Atkinson (A. G.). **Rat-Bite Fever.**—*Med. Chronicle.* 1913. April. Vol. 25. No. 1. pp. 1-28.

The author gives a description of ten cases of Rat-Bite Disease, five of these being hitherto unpublished. He also gives a general description of the disease with references. [For these see this *Bulletin*, Vol. 1, pp. 407-409.] In one of his cases a bite was inflicted by a kitten which had been seen playing with the body of a rat a short time previously. In another case the patient was bitten by a ferret which had just killed a rat. Comparison of these cases with the others leaves no doubt in the author's mind, however, that they were examples of the same disease, the virus being derived indirectly from the rat. In Japan, it is stated, the weasel is known also to be a carrier of the disease. The symptoms in the cases described are typical. [See this *Bulletin*, Vol. 1, p. 407.] The author confirms the observations made by others as to the absence of any parasite in the peripheral blood. [It is possible that the virus may be a filterable one. The fact of so many cases having been reported shows that the disease is by no means uncommon.]

G. C. L.

Vomiting Sickness.

Scott (Government Bacteriologist of Jamaica) writes to say that the statement attributed to him that vomiting sickness is nothing more nor less than fulminating cerebro-spinal meningitis [See this *Bulletin*, Vol. 2, p. 104] is not quite correct. Paragraph 10 of the summary of his Report (omitted from his paper in the *Annals of Tropical Medicine & Parasitology*), explains his views more clearly.

"10. The facts related enable one to say that in a certain proportion of cases exhibiting the Symptom-Complex of Vomiting Sickness the Meningococcus is present, but it does not prove that this is the only cause at work. One is not justified in stating more than this: that, after excluding such conditions as Worms, Gastro-Enteritis, Marasmus, Food poisoning, etc., there is a residue of cases, some of which are due to the Meningococcus, often alone, but at times probably in combination with some other organism, while there still remains an unexplained residue, the cause of which is yet to seek."

G. C. L.

Various.

Castellani (Aldo). **A Note on Broncho-oidiosis.**—*Jl. Trop. Med. & Hyg.* 1913. Apr. 1. Vol. 16. No. 7. pp. 102-104.

Remarks on a case of broncho-oidiosis contracted in Ceylon with a relapse in England. The sputum presented microscopically round and oval yeast-like bodies, no tubercle bacilli. On cultivation a fungus was isolated with all the characters of *Monilia tropicalis* Cast. Sajodin gr. xv. thrice daily was administered with good results.

The author makes some general comments on diseases of the bronchi and lungs due to fungi, which he classifies as follows:

1. Those due to fungi of the genera Monilia, Saccharomyces, and Cryptococcus.
2. Those due to fungi of the genus Nocardia.
3. Those due to fungi of the genera Mucor, Rhizomucor, and Lichtheimia.
4. Those due to fungi of the genera Aspergillus, Sterigmatocystis and Pencillium.
5. Those due to undetermined fungi.

The symptoms are somewhat similar whatever fungus is the etiological agent. In mild cases there are signs of slight bronchitis with mucopurulent expectoration in which the fungi are found. In severe cases the patient presents the clinical symptoms of phthisis, with hectic fever and haemorrhagic expectoration. As regards treatment potassium iodide is useful in many cases.

G. C. L.

Carson (G. R.) & Cummins (W. T.). **A Case of Coccidioidal Granuloma (California Disease).**—*Jl. Amer. Med. Assoc.* 1913. July 19. Vol. 61. No. 3. pp. 191-192.

Another case of Coccidioidal granuloma is described. The subject was an American clerk living at Coalinga, San Joaquin Valley, California. He was admitted into hospital with severe diarrhoea, headache and a high temperature.

During the last week a cough developed with sweating and mild nocturnal delirium. A clinical diagnosis of typhoid fever was made. Death occurred on March the 2nd, 1913. At autopsy the lesions appeared to be those of miliary tuberculosis, and were largest in the spleen. Microscopically however they were found to be due to the *Oidium coccidioides* (Ophüls). The patient had never presented any skin lesions to account for this infection.

G. C. L.

Marshall & Meerwein (Werner). **Über das leukozytäre Blutbild, einschliesslich Verschiebung der Neutrophilen, bei wilden Eingeborenen von Neuguinea.** [On the Leucocyte Blood Picture, particularly with reference to the Neutrophiles in natives of New Guinea.]—*Folia Haematologica.* 1913. Vol. 15. (1. Teil. Archiv.) pp. 229-236.

In differential leucocytes counts, lymphocytosis and eosinophelia were common, the latter probably being due to helminthiasis. A

series of tables with detailed leucocyte counts of different diseases is appended. These include malaria, elephantiasis and other conditions.

G. C. L.

Annual Reports.

Stanley (Arthur). **Shanghai Municipal Council Health Department Annual Report, 1912.** 45 pp. 1913. Shanghai: Printed by Kelly & Walsh.

Several infectious diseases of different nature were met with during the year.

Cholera: Acute diarrhoea of choleraic type was prevalent from July to September, 1912, the disease affecting both foreigners and Chinese. In none of the numerous cases examined, with the exception of a case introduced from Sungkiang, was the characteristic cholera organism found after repeated and extended examinations. Not only were vibrios of any kind remarkable for their absence from the stools of these cases, but, such as were discovered, showed no agglutination with a specific cholera serum. Though the disease was not recognised as Asiatic cholera the cases were notified as that disease by practitioners and cases conveyed to Japanese ports on ships from Shanghai were declared to be cholera and quarantine restrictions imposed.

Beriberi: The incidence of this disease amongst municipal prisoners has diminished. The evidence, according to the author of the report, preponderates in favour of the disease being an infective one, having no direct relationship to food but infective through body vermin. He believes that the recommendations regarding the admission of municipal prisoners will, if carefully carried out, settle the point.

Dysentery: Dysentery, with liver abscess as a not infrequent sequel, continued prevalent. The disease as it occurs in Shanghai is mostly amoebic in origin and very prone to produce liver abscess.

Plague: Plague-infected rats were found in December 1908, and a complete plague survey of the Settlement has been maintained since. During 1912, 14,988 rats were found dead and brought to the Laboratory for examination, and of these 95 were plague infected, compared with 187, 249, and 138 during the three preceding years. During the year nearly 154,000 rats were trapped and burnt. These, with the rats found dead and examined for plague, brought the total number of rats visibly accounted for to 168,988. In addition to the trapping, close on six million phosphorous baits were laid, about a ton of poison being used. This proved a powerful method in dealing with infected foci. Poisoning on so large a scale carried with it certain risks of course, but after the adoption of poisoned cubes, coloured bright blue, instead of the usual method of spreading the poison on bread, no cases of adventitious poisoning were reported. 1,597 houses, in plague foci, were temporarily rat-proofed and

pulicidally disinfected, bedding etc. being passed through the steam disinfector. This temporary rat-proofing included the plastering up of rat holes, together with the bricking up and wire-netting of places permitting the ingress of the rodents into the houses. At the same time the furniture of the house was removed to permit of a thorough examination for rat holes and runs.

As a result of the extensive rat-proofing operations in the last two years, some 5,265 houses being done, a gratifying reduction of plague-infected rats has resulted: during the last quarter of 1910 there were 126 plague-infected rats found while during the same quarter of 1912 only four were found.

G. C. L.

STRONG (W. M.). **Annual Report, Medical Officer, Department of Native Affairs and Control, 1911-12.**—*Papua. Report for the Year ended 30th June,* 1912. pp. 160-162. [Printed and published for the Govt. of the Commonwealth of Australia. (1912. No. 87.).]

Strong states that in Papua, malarial infections are very common. In some villages nearly every native child shows signs of the disease. Although the type of parasite found is generally the malignant one, yet the infection in the case of natives seldom gives rise to any very serious condition of ill-health. The adult native of the coastal villages is usually more or less immune, and does not suffer appreciably from the disease as long as he remains in his own village, but if he leaves there he is liable to become infected. Coast natives are also very liable to become ill with malaria when taken into the relatively colder hill areas. Malaria is the cause of a certain amount of sickness on the plantations: it is unknown among the natives of the mountains; but, after visiting the coast these are very liable to become affected with the disease on their return home.

Leprosy has at times been reported from places on the south coast of the Territory. Mention is made of it in some of the old annual reports. In quite the early days of the country it is stated that a Polynesian immigrant became ill and died from a disease which was supposed to be leprosy. The case was never seen by a medical man, but he was seen by a layman who was familiar with the disease. Recently several cases have been found in the Mekeo villages and another small focus in the Trobriand Islands. The disease has, in all probability, been introduced into the country.

A comparatively little known disease is not uncommon on the south coast of the Territory. It is variously called rhinopharyngitis mutilans or gangosa. It might at first sight be mistaken for leprosy, and it is possible that some of the earlier reports about the latter disease may really refer to it. The exact nature of gangosa can hardly be regarded as settled. From what the author has seen of it he is satisfied that it is neither a form of syphilis, leprosy, nor lupus. It may perhaps be the disputed

tertiary or late stages of yaws, or perhaps it is a specific entity. The same disease is found in the Philippines and neighbouring islands, and has been described in other parts of the world; its comparative rarity in parts of the Territory other than the south coast suggest that it has been introduced.

Yaws is very common on the south coast of the Territory, but comparatively rarer in other parts. It is by no means improbable that it was introduced into the country when contact first took place with the outside world, and it has now spread to some of the outlying islands.

G. C. L.

Book Review.

Besson (A.). **Practical Bacteriology, Microbiology and Serum Therapy (Medical and Veterinary). A Text Book for Laboratory Use.** [Translation from the 5th French edition by H. J. Hutchens.] xxx. + 892 pp. With 416 illustrations. 1913. London: Longmans, Green & Co. [36*s*. net.]

The author in his preface to the 5th edition of his work states that recent advances in microbiology have necessitated an entire revision of the text. Most of the chapters have therefore had to be recast and much new matter has had to be incorporated. The original form of the book however is retained. All discussion upon matters of theory has been omitted with the exception of a chapter on Immunity and the Properties of Immune Serum. In the second part of the work notable changes will be found in the chapters on dysentery and meningitis while many modifications and additions have been introduced into the description and classification of the parasitic protozoa, especially the Piroplasmata, Leishmania, and Trypanosomata.

The edition, as in former ones, is clear, concise and thoroughly up to date. It is not necessary here to give a detailed list of the subjects dealt with in the work. It is sufficient to say that it covers everything required in an up to date laboratory and can be thoroughly recommended.

A word of praise may be added to Dr. Hutchens for his excellent translation. He has made certain necessary alterations at places and has added notes and additions, but these are clearly indicated either as footnotes or by being enclosed in square brackets. By this device the reader can see at a glance who is responsible for the statement.

Dr. Hutchens has also carefully revised the illustrations and has added many new ones.

These enhance the value of the work.

G. C. L.

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